Kidder (Jer.)

ILLUSTRATED CATALOGUE

OF

Jerome Kidder's Electro Manufacturing Co.

HIGHEST PREMIUM

VITALIZING,

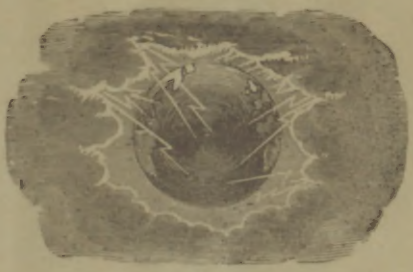
GENUINE SIX AND NINE CURRENT

ELECTRO-MEDICAL APPARATUSES.

FRANCIS M. KIDDER & CO.,

SUCCESSORS TO DR. JEROME KIDDER,

820 BROADWAY, NEW YORK.



"Your method of varying the PRIMARY as well as the inducted currents, surpasses all other devices I have studied, as tested by scientific instruments and by physiological effects."

R. OGDEN DOREMUS, M.D., Prof. Chemistry and Physics in the N. Y. City College, and Prof. Chemistry and Toxicology Bellevue Hospital Medical College.

GOLD MEDAL

Awarded to Dr. Jerome Kidder, at the AMERICAN INSTITUTE FAIR, in the Fall of 1875, for the best Electro-Magnetic Machine, being the *only Gold Medal* awarded either here or abroad for Electro-Medical Apparatus.

Dr. JEROME KIDDER'S
ELECTRICAL DEPOT,

820 BROADWAY, NEW YORK.

The discrimination in the Centennial awards, as is well known, existed in THE WRITTEN REPORTS ON AWARDS by the judges, and not in the medals, which were all alike. Dr. Kidder, as far as he knows, is the only one who has published any authorized report upon such apparatus. The Centennial award is as follows:

International Exhibition,

PHILADELPHIA, 1876.

The United States Centennial Commission has examined the report of the Judges, and accepted the following reasons, and decreed an award in conformity therewith.

PHILADELPHIA, *Feb.* 24, 1877.

REPORT ON AWARDS.

"PRODUCT,

GALVANIC APPARATUS.

Name and Address of Exhibitor,

JEROME KIDDER, M. D., New York.

The undersigned, having examined the product herein described, respectfully recommend the same to the United States Centennial Commission for award for the following reasons: For the **Scientific basis** and the excellent workmanship of all the exhibited Apparatus; for the introduction of a new method to get very rare interruptions from a self-acting interrupter; for the fitness for the purposes of **changing the quality and quantity** of the galvanic current, and for the very good construction of Galvano-Caustic Apparatus.

Dr. ERNST FLEISCHL, *Signature of the Judge.*

Approval of the Group of Judges.

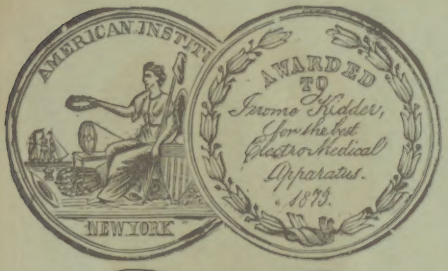
W. ROTH, M. D., *Surg.-Gen., Saxony, German Army.*
J. H. THOMPSON, A. M., M. D.
C. B. WHITE, M. D.

A True Copy of the Record.

FRANCIS A. WALKER, *Chief of the Bureau of Awards.*

Given by Authority of the United States Centennial Commission.

J. R. HAWLEY, *President.*
A. T. GOSHORN, *Director-General*
J. L. CAMPBELL, *Secretary.*



RESEARCHES

IN

ELECTRO-ALLOTROPIC PHYSIOLOGY,

USES OF

DIFFERENT QUALITIES

OF

ELECTRICITY TO CURE DISEASE.

By Jerome Kidder, M. D.,

Fig. 10.

Fig. 5.

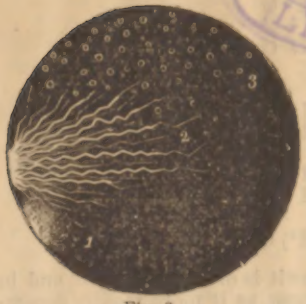


Fig. 3.

Fig. 12.

820 BROADWAY, NEW YORK

ELECTRO-ALLOTROPO-PHYSIOLOGY.

Uses of Different Qualities of Electricity to Cure Disease.

Exceedingly interesting, as far as it can be understood, is the manner in which certain qualities of electricity advance vital processes and so aid nature in the cure of disease.

In examining this subject, let us consider the great law of *allotropism*, and (its allied term) *isomerism*, the former expressing the difference between bodies identical in composition, and the latter predicating identity of composition between different bodies.

There are many examples of the same elements forming different substances. Acetic acid, lactic acid, and grape sugar are each formed of the ultimate proportions of one part carbon, two of hydrogen and one of oxygen, as expressed by the following formulas:

Acetic Acid, $2\,(C\,H^2\,O) = C^2\,H^4\,O^2$
Lactic Acid, $3\,(C\,H^2\,O) = C^3\,H^6\,O^3$
Grape Sugar, $6\,(C\,H^2\,O) = C^6\,H^{12}O^6$

Butyric acid, Acetic ether, Aldehyde and Oxyde of Ethylene are quite different substances, yet they have the same percentage of composition, viz:

Carbon,	54.55
Hydrogen	9.09
Oxygen	36.36
	100.00

Their composition is expressed by these formulas:

Butyric Acid	$C^4\,H^8\,O^2$
Acetic Ether	$C^4\,H^8\,O^2$
Aldehyde	$C^2\,H^4\,O$
Oxyde of Ethylene	$C^2\,H^4\,O$

Butyric Acid $C^4\,H^7\,O \atop H \Big\} O$

Acetic Ether $C^2\,H^3\,O \atop C^2\,H^5 \Big\} O$

Aldehyde $C^2\,H^3 \atop H \Big\} O$

Oxyde of Ethylene $(C^2\,H^4)\,O$

Oxygen exists in two allotropic states; in one it is ordinary oxygen, and in the other it is ozone, which is called active oxygen, as it more readily decomposes many substances.

Iron exists in two allotropic states, in one of which it simulates the unoxydable character of gold or platinum; and in the other state it is common iron, being very readily oxydable.

Charcoal, plumbago and the diamond, are only carbon existing in different allotropic states, causing them to differ as to their specific gravity, their conduction of heat and electricity, their power of absorbing, reflecting and transmitting light, and also in their relations to oxygen; for there are varieties of charcoal which spontaneously take fire in the air, while the diamond can be burned only in pure oxygen.

The peculiar state of bodies may be retained when they unite with other bodies to form compounds. So carburetted hydrogen and otto of roses, which have the same ultimate composition, may differ, as Millon suggests, in the one containing charcoal carbon, and the other, diamond carbon. If carbon and hydrogen unite, it is possible we may have three different compounds—one containing charcoal carbon, a second plumbago carbon, a third diamond carbon, or if we designate these respectively *Ba* C*p* C*y*, we may have for their formulas, C*a* H, C*p* H, C*y* H.

Influences change an Element.

Influences change an element from one allotropic condition to another, and new chemical changes result therefrom. Sparks of electricity through the air change a portion of the oxygen to ozone. Oxygen set free from water by the galvanic battery is often in a similar state. The indigo ray by itself, or existing in light changes chlorine from the passive to the active condition, as instanced by its causing chlorine and hydrogen to unite with an explosion. Contact with spongy platinum has the same effect on these mixed gases. Pure chlorine gas expanded by heat, condenses again on cooling, but expanded by blue and violet light, retains its expanded bulk permanently. The expansion is not more than one-tenth as great when submitted to red rays, which shows that it is not the heat of the ray, but the quality of the ray itself that causes the expansion.

Iron, by a simple process, which any one can perform, (as will be shown farther on,) assumes the nature of gold or platinum as far as its oxydable character is concerned, and can as readily be thrown back to the nature of common iron. Thus two pieces of iron may be conditioned so as to compose the elements of a galvanic battery, one answering to the platinum, and the other to the zinc.

The basis of the physiological vital processes are the chemical affinities with their *allotropic variations*, without which there could be no contraction of muscle, no action of the brain, no mental wakefulness; nor even could there be sleep, for sleep is a condition in which the vital process of recuperation takes place—a restoration by means of a particular relation of the chemical affinities governed by special *allotropic* conditions of the elements of repair. When the mind has been very active, there is increased elimination of the products of waste of brain material, principally the oxydized compounds of phosphorus.

Also, when there has been great muscular activity, there is increased elimination of the products of muscular waste,—urea, the oxydized compounds of sulphur, carbon, etc.

To repair the wearing constitution, digestion, which is a regulated chemical action, takes place within the organs designed for this process. But digestion could take place, *in a certain degree*, without the agency of the nervous system, yet it can not be denied that certain nerves preside over that function, for it is well known that a genial condition of the mind aids digestion, while fear or a depressed state of the nervous system, interferes with nutrition, circulation and digestion.

With regard to muscular contraction this law also applies. For though motor nerves preside over the contraction of the muscles, yet this power of contraction exists in muscular fibre, causing it to contract from other external stimuli, independent of and without regard to the presiding influence of nerves. In some of the lower animals, muscular fibre is distinct, not connected with nerves, as in the vorticelli and infusoriæ. This inherent irritability of muscular fibre is designated by different terms, viz: *Vis Irritabilitatis*, Vis Vitæ, *Vis Insitæ* of Haller, *Vis Vitalis* of Gorter, *Oscillatio* of Bœrhaave, *Tonic Power* of Stahl, *Vita Propria*, Irritabilitas Halleriana, *Inherent Power*, Excitability, etc. This power of inherent responsive movement of muscular fibre, when acted upon by external stimuli, is a vital property which belongs to all living animals. Notwithstanding the inherent irritability of muscular fibre, it is still more familiar to general knowledge that the nerves, also influenced by the will, have the power to cause these contractions.

As regards mental processes, the will, through the nervous system, to a great extent, determines how great shall be the action of the brain, and therefore, to a

certain extent, decides when those elements—phosphorus and oxygen—shall possess the allotropic conditions, giving them affinities which cause them to go into that manner of union which determines processes of reasoning and calculation.

Also, the will, through the nervous system, determines how great and of what character shall be the action of the muscles, and therefore, through the nervous system, decides when those elements—sulphur, carbon, hydrogen, nitrogen, oxygen—existing in the organized muscle, shall be modified in their allotropic conditions to have such affinities that their consequent unions contract the muscles, yielding urea, creatine, extractives, etc., which, in their further changes, are resolved to urea, sulphuric, carbonic acids, etc.

Electricity closely Allied to the Nervous Influence.—Construction of an Artificial Nerve.

Though electricity is not itself the nervous influence, they are closely allied. They differ in rate and character of conduction. Electricity moves at the rate of about 288,000 miles per second, while the nervous influence moves at the rate of about 111 feet per second, more or less, according to modifying conditions.

Now let us construct an artificial nerve, and observe how it behaves on applying certain kinds of stimuli which excite the nerves in a living body.

Here are three test tubes, nearly filled, the first with nitric acid, specific gr. 1.399, the second with nitric acid sp. gr. 1.375, the third with nitric acid sp. gr. 1.250.

1. Into the tube containing nitric acid sp. gr. 1.399 I place a wire or small rod of iron.

2. Now the nerve of an animal consists of an external sheath, the neurilemma, corresponding to the glass tubes, as far as its use is as a vessel to contain the working matter. Next there is the medullary substance, called the white substance of Schwan, which is an albuminoid body, (in which exist the constituents of nitric acid,) corresponding to the liquid in these tubes.

In the centre, surrounded by the white substance, is the axis cylinder or band corresponding to this wire or rod of iron in the solution contained in the tube.

Though iron is usually active, readily decomposing in nitric acid, yet this wire, after slight action at first, has become perfectly passive, no action whatever taking place, as though it were platinum or gold. Fig. 1.

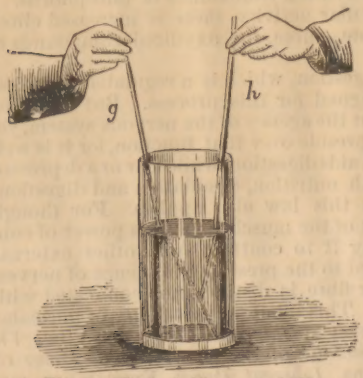


Fig. 1.—Nitric Acid, sp. gr. 1.399.

Fig. 2.—Nitric Acid, sp. gr. 1.375.

We now place this wire in the nitric acid, sp. gr. 1.250, and it is still passive, but if it had been *first* placed in this same acid it would have been active. We now dip into this same solution another wire, a common iron wire, which is active; a brown substance gathers upon it, and immediately small bubbles begin to rise from it. With this latter wire we touch the former inactive

wire, and immediately it is changed to its common condition, and chemical action commences upon that also. There was no perceptible lapse of time in which the changed condition progressed from the point touched to the more remote parts, as action by the acid appeared to the eye to be simultaneous upon all parts of it. Fig. 3.

No. 2.—Nitric Acid, sp. gr. 1.250.

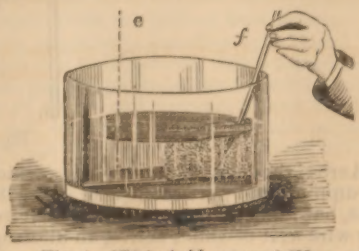


Fig. 4.—Nitric Acid, sp. gr. 1.399.

But under modified conditions the allotropic change progresses more slowly, showing its movement plainly. We will first change the wire back to its former passive state by associating it with a wire of platinum, or with another wire already in the passive state, and *gradually* introducing them into the acid, sp. gr. 1.399, the platinum, or the inactive wire, extending lower so as to go in *first*. Observe that this wire has again become passive, no chemical action taking place. But on placing it in the second tube of acid, specific gravity 1.375, and touching it with an active wire, activity begins first at the part touched, and thence progresses onward, till the whole has become active. Fig. 2.

Again making this wire passive as before, we place it in the tube No. 1, where we make firm contact with a wire rendered strongly active, and activity begins at the part touched, and moves much slower than in the tube No. 2, as shown by the rising bubbles.

In pure nitric acid the allotropic change in the wire sometimes moves very slowly, and sometimes after advancing a short distance from the point of contact of the exciting wire, it remains stationary, leaving a portion of the wire entirely inactive in the solution, while the remaining part is being rapidly dissolved by intense chemical action. Fig. 4. In some experiments, in tube No. 1 the allotropic change progressed at the rate of about one inch in twelve seconds, while in tube No. 2 it progressed at the rate of one inch in two seconds, and in tube No. 3 the rapidity of the change was so great that it seemed instantaneous.

In nitric acid, sp. gr. ranging from about 1.380 to 1.390, the allotropic change can be so governed that there will be pulsations of the active change following one another from the point of contact with an active wire; and under certain conditions these pulsations can be made to follow, the first a short distance, as one-quarter inch, the next, half inch, the next, three-quarter inch, and so on, each allotropic pulsation going farther than that preceding it. These pulsations may follow each other slowly, or at an interval of one or two seconds, or they may become more rapid, so that the intervals will be scarcely distinguishable, and still more rapid, to apparently constant action. Is it possible that all chemical activity goes on with successive intervals of activity and passivity, yet undistinguishably rapid, and *thus* produces in conductors rapid molecular movements which we call electricity?

An inactive wire is made active by even slight friction or a blow. Wiping it will render it active. A current of electricity will also render it active. Let

the wires of platina P and N, Fig. 5, be arranged so as to be conveniently closed with the poles of a galvanic battery.

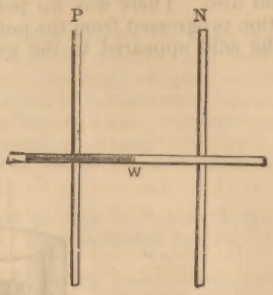


Fig. 5.

Across these lay the iron wire *w*, which has previously been rendered inactive by dipping into pure nitric acid. It is bright when laid there, and still wet with acid, but immediately on closing the circuit so that the electric current traverses the wire *w*, it becomes active, an allotropic change progressing from the positive pole, as shown by the acid on its surface becoming dark as it acts upon the iron.

As a law, this allotropic change begins at, and progresses both ways from, the positive pole, and moves the entire length covered with acid; but modifying conditions cause exceptions as to the point where the allotropic change begins. For instance, if the platina wires P, N, are the terminal conductors of a galvanic or faradaic current so weak that of itself it does not *readily* render the iron wire crossing them active, then that part of the wire which has been subjected to the more, however slight, attrition or concussion when laying it across, is first thrown into action.

That the electric current itself, without any attrition or concussion, has power to render the wire active, is demonstrated by using a battery of a dozen strong galvanic cells, and laying the inactive wire *carefully* across the platina wires P and N while the circuit is open in *another part*. The iron wire retains its inactive condition till that *other part* of the circuit is also closed, when immediately and always at the positive pole the allotropic change commences.

3. Now let us arrange the conditions so as to make the artificial nerve actually do what is done by the nerve of a living body. We take a vessel, as glass, containing nitric acid, specific gravity 1.250, and place within it a porous cell containing nitric acid, sp. gr. 1.399. In each of these cells we place a strip of sheet-iron six inches long and one inch wide, which has been rendered inactive by the means previously stated, and each strip of sheet iron has a wire conductor brought into relation with a certain metallic helical arrangement which is also supplied with conductors that are grasped in the hands of the human living subject. No effect is yet produced. We take an iron wire one-eighth of an inch in diameter, which also has been rendered inactive by being dipped in nitric acid, specific gravity 1.399. With this we touch either of the sheet-iron strips below the surface of the acid, and still no effect is produced. But by rubbing this wire briskly for a few seconds, and with it again touching the strip of sheet iron below the surface of the acid, sp. gr. 1.250, immediately there is excited an influence which is transmitted by the conductors to the helical arrangement, where it is modified and carried onward through the arms of the living human subject, the muscles of which contract powerfully beyond his control; also, by similar arrangement, and using more metallic surface, a small platinum wire can be heated so as to discharge a cannon, etc., etc.

We have seen that the allotropic changes moved along the wire rapidly or slowly, according to certain conditions, one of which was variation in the specific gravity of the nitric acid surrounding it. Now in certain conditions the nervous influence in the living nerves of the body moves quite slowly. In the Medical and Surgical Reporter of Jan. 4th, 1873, Dr. Meredith Clymer refers to a case of loco-motor ataxia, where the application of heat or a pin was felt *many seconds after*. Longet states that by the irritation of both vagus nerves the muscles of the stomach contract *after five or six seconds*.

Now let us make further reference to the substance of the nerves of a living body. Blood must be supplied to the nerve as one condition of its activity, and human blood contains iron, which is a substance highly susceptible of allotropic changes. Also the medullary substance, myeline, or the white substance of Schwan, which surrounds the central axis or band, as previously stated, is an albuminoid body, which contains Carbon, Hydrogen, Nitrogen, Oxygen, Sulphur, Phosphorus. All these exist in different allotropic states. Carbon, as we have seen, has three noted differences. The gases, in chemical combinations, are fluids or solids. Oxygen and nitrogen are the elements of nitric acid, and both sulphur and phosphorus exist in different allotropic conditions. Oxygen and hydrogen combined are water, which by admixture readily changes the specific gravities, and so varies susceptibilities to rapid or slow action.

According to R. D. Thomson, the brain contains a peculiar acid, which he calls cerebric acid, which contains nitrogen and phosphorus; this is mixed with an *albuminous* substance, with an *oily acid*, the oleophosphoric acid, with cholesterine, and finally with small quantities of oleine and margarine, and of oleic and margaric acids. Anhydrous oleic acid is carbon, hydrogen and oxygen, having the formula $C_{36}\ H_{34}\ O_3$. Anhydrous margaric acid is carbon, hydrogen and oxygen, having the formula $C_{34}\ H_{33}\ O_{37}$.

Thus we find that brain and nerve substance are composed of elements susceptible of an exceedingly great variety of combinations and allotropic expressions, capable of being exercised in the various duties they have to perform.

Elective Uses of Certain Ranges in the Qualities of Electricity.

The vibratory movements excited in the molecular particles of metallic wires, or in the ether contained in them, which movements are called *electricity*, have differences in their physical effects according to the character of those vibrations, and they are proved to have different physiological effects also. Vibratory or wave motions in particles of air or of ether, giving sound, heat, light, and chemical effects, have vast differences in their physical and physiological effects, and, by way of comparison, before going farther, let us consider these.

Very different effects are produced by merely different characters of vibratory or wave motions in the same medium. Long waves in the air produce sounds of a low pitch, and short waves sounds of a high pitch, and there are waves so short as to produce no effect on the human ear.

So in regard to the waves in the ether; one character of wave will produce heat and not light, another light and not heat; different characters of waves produce the different colors as shown in the spectrum, and a still different character of the waves produces certain actinic or chemical effects, which are quite different from the effects produced by heat. And these different characters of ethereal wave motions are principally differences in the rapidity and lengths of the same, the rays of heat being produced by waves slower, but of greater amplitude, then as the rapidity increases, and the amplitude diminishes, we have red, orange, yellow, green, blue, indigo, violet and the actinic rays which are also invisible.

The heat, the colored and the actinic rays, to a certain extent, overlap one another in the spectrum; also different kinds of refracting media give different degrees of refrangibility of the rays of heat compared to the color rays—

through a	Water prism it is found in the yellow,		
	Sulphuric Acid	"	" orange,
	Plate glass	"	" middle of the red,
	Flint glass	"	" beyond the red.

A cell of alum intercepts the rays of heat, but allows the light to pass, while a cell of iodine dissolved in bisulphide of carbon intercepts the luminous, but allows the calorific rays to pass.

The heat rays, if concentrated on a piece of platinum coated with platinum black, are accelerated so as to become visible; and likewise rays, passed through a solution of sulphate of quinine, and some other substances, are retarded so as to become visible—the visibility of the latter is called *fluorescence*. It is exhibited in an aqueous solution of horse-chestnut bark, by many compounds of uranium; a decoction of madder mixed with alum gives a yellow or orange

yellow fluorescence. Tincture of tumeric and yellow thorn-apple seeds diffuse a *greenish* light—all caused by lowering the refrangibility of the invisible actinic rays so as to make them visible.

As to the power of coloring plants green, Robert Hunt found that every variety of plant he employed appeared to be influenced by different rays. Cress and mustard became green most rapidly in the green ray, mignionette in the yellow and peas in the blue—the influence was most decided between the mean orange and the mean blue ray, and plants became green more slowly in the red than in the blue ray. Guaiac resin, which is turned blue by exposure to sunlight, is not at all affected by any of the visible rays of the spectrum, the action beginning only in the ultra violet, and the maximum being situated a long way beyond the visible spectrum.

Light heat and actinism are common to every ray, the difference being only proportional; a yellow medium gives most light and less actinism, while a blue medium gives more actinism and less light.

Light hinders the germination of seeds. Actinism quickens germination. Light effects decomposition of carbonic acid in growing plants, which absorb carbon and give off the oxygen. Light and actinism, independent of the calorific rays, prevent the development of the reproductive organs of plants. The heat rays, corresponding with the extreme red, facilitate the flowering of plants and the perfecting of their reproductive principles.

Many bodies, under peculiar circumstances, are thrown into such a state of vibration that they emit light without perceptible heat, called phosphorescence. Decaying bodies, flowers of certain living plants, etc., exhibit this quality. Different rays of the spectrum differ as to their power of producing phosphorescence. Electric light produces phosphorescence more actively than the solar rays.

Very strange are all the foregoing varied effects when we consider that the calorific, luminous, chemical and phosphorogenic rays are all substantially the same in their nature, being each and all produced by movements of the ether, those movements differing principally in rapidity and degree.

The functional activity, not only of muscles, but of nerves also, is influenced by currents of electricity. And as a motor nerve electrically excited causes a muscle to contract, so also, as shown in standard works on physiology, regulated electrical excitation of the respective nerves presiding over the organs of digestion, secretions, circulation, etc., influences their functional activities. Now we should look also for electrical influence over the functional activities of other organs themselves without regard to presiding nerves, just as much as we look for electrical excitation to influence a muscle directly without regard to its presiding nerve. It seems that we must recognize this when we consider the fact that *each element* in the organism has its *individual activity*, which is evident from the comparison of vegetable and animal organizations, the independent development of tissues after the evolution of the germ, physiological dissections on the living animal, the mode in which poisons act, etc., etc.

A very important fact to consider is that the different organs of the body have their gradations as to susceptibilities to different qualities of electricity. An induced current on a coil of wire of a certain ratio as to length, thickness, number of convolutions, with certain other modifying conditions, electrically excited, will cause powerful muscular contractions, but will produce very little light to the eye. Now if we arrange another coil of wire so as to yield a current of much higher intensity and less quantity, this latter conditioned coil being excited in the same manner as in the former case, will have less effect on the irritability of muscular tissue, but will produce light to the eye, when the current is regulated to be so weak as not to produce pain, will, when properly used, have a more soothing effect upon the nerves—will better relieve nervous headache, and cause deeper inspirations by properly influencing the medulla oblongata and cervical spine, the negative, with large wetted sponge, being the preferable electrode on those regions.

Now if another coil, conditioned for considerable greater quantity than the first mentioned, but far less intensity, ranging from A B to A C, in Dr. Kidder's improved apparatus, it will produce no light whatever to the eye, even when the current is strong enough to produce pain—it will not contract the muscles

so powerfully—it will not so well soothe pains in the system; but by its influence, using the positive as the preferable pole, it will exercise a remarkable specific effect in restoring to their normal condition muscles that are sore from the effects of over use and strains, and all allied conditions.

In this respect a more special contrast in the differences of these qualities will be here presented. Placing the negative pole farther towards the extremities, and using currents of sufficiently high intensity and low quantity, graded to the strong muscular contracting tendency, as in the current A D, Dr. Kidder's improved instrument, a strong power can make the muscles sore and lame. Now using the current from A B or A C with light power, and using the *positive* pole upon the lamed muscles, the soreness and lameness will be almost immediately cured, when otherwise it would not pass away for a considerable length of time. These results became known to Dr. Kidder first by many trials upon himself, which have been amply corroborated by trials upon others. Inflammatory excitements, as burns, etc., wil be better relieved by the negative, using very *large* surface of sponge, or what is better, having the part in water with the negative electrode, and using especially currents of high intensity and low quantity, as A E of the improved instrument.

Further considering this subject, we may contrast the two *general* processes, which are the opposite of each other, that take place in the living body. One is nutrition of the tissues of the various organs, and the other is the functional activity of those organs, which wears away the tissues; and they again call for more nourishment, without the supply of which their activity would soon cease. The assimilation of nourishment in the tissues takes place more during the night, while the body is at rest. The using up of the tissues takes place more during the day, when the body is active. Now the relations of electricity to these two conditions appear to be these. Electrical currents, especially of the induced order of *high intensity* and *low quantity*, act comparatively more in producing functional activity of the various organs of the body, though somewhat different range of the ratio of quantity and intensity of the current is best adapted for the different organs, which is shown by the different ratio required to best excite the motor and the visual functions. But currents of comparatively lower intensity and a higher quantity are the better range to produce the allotropic changes that bring wearied organs almost immediately to a rested condition.

In the former case it is better to excite the various organs with the negative pole, having the positive more central toward the medulla oblongata, while in the latter case it is preferable to use the current in the opposite direction.

Now if a wire be conditioned so that the vibration of its particles should be similar to those produced in ether by white light, why should it not produce light to the eye? Why should it not excite whatever substances are in the eye and brain that correspond in their effects to the fluorescence produced in sulphate of quinine, by the lowering of the refrangibility of the invisible actinic rays so as to make them become visible rays, and why should they not also exhibit phenomena of colors?

So we find that the functional activity of different organs of the body, and the processes of their repair, respond better to different characters of vibratory movements which we call electricity.

The Exercise of the Visual Functions.

By using the proper electric currents, the eye and the brain may indeed experience phenomena, like to the reception through the eye of white light, colored light, and light of the characters called fluorescence and phosphorescence.

Dr. Kidder has made costly Electrical Apparatus, having the current ranged in quality to produce more special varied optical phenomena, which are not observable effects of his more ordinary apparatus. One of these instruments was placed in the hands of an artist, for him to illustrate the visual phenomena produced by the current, and the following are the results which he gave, after thorough experiments with currents of pretty strong power:

Fig. 1. Placing the sponge to the bone over the left eye softly, observed lines of light, which were sometimes straight, with slight flashes crossing them, (all white light.)

Fig. 2. Now by pressing hard against the bone on the right side of the right eye, there is a great change. Immediately globes of a red color shoot from the right to the left slowly, and blue globes (1) will burst asunder like meteors and

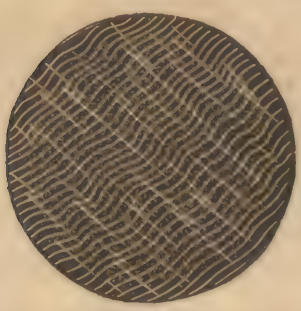


Fig. 1.

Fig. 2.

instantly disappear; small yellow star-like shapes (3) will continue to travel up and down, while instantaneous white flashes pass through the field. There is also a slight ringing in the ear.

Fig. 3. Moving the sponge across the forehead (at eyebrows) to the left eye, there are vivid flashes (2), while yellow spots move rapidly across, dying out near the centre (3), while a bright light (1) at the left moves up and down. Fig. 3 is on first page.

Fig. 4. Sponge over the right eye, there is a yellow light on the left side, dying out at the centre, trembling as it dies into darkness. There is a humming noise in the right ear.

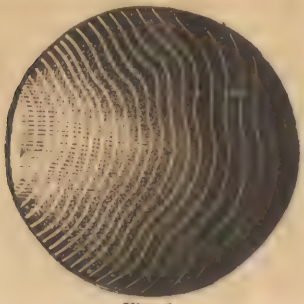


Fig. 4.

Fig. 6.

Fig. 5. Rainbow colored globes slowly moving from left to right, while flashes cross from left to right: the sponge is now on the eyelid and considerable force of the current (7 minutes) pressing hard. Now placing sponge on the left eye, Fig. 6 came to view. Fig. 5 is on first page.

Fig. 6. Sponge on left eye, pains run over the head, the short yellow flashes appeared, while in the centre were light blue spots rapidly appearing and disappearing. (Strong power of the current.)

Fig. 7. After resting ten minutes, the sponge was placed in the corner of the left eye by the bridge of the nose,—strong power of the current was applied, when I received a violent shock and a reflection, as sunlight on the ceiling is reflected from a basin of water, moving at an angle up and down, the centre ring being the brightest, and dying out as they came near to the surface of the field of vision.

Fig. 8. The current was now made very weak, and pressing the sponge on centre under the eye, an object like a coiled snake appeared, with flashes of light around it. These became more vivid by harder pressing with the sponge, and

they moved constantly, dying out at the tail with a flash, the *base of supply* being the centre *a*.

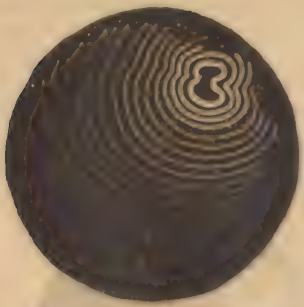


Fig. 7.

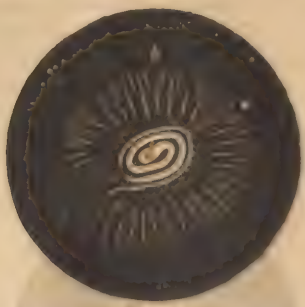


Fig. 8.

Fig. 9. Feeling a pain on the top of my head, I removed this in a very short time by using the proper current, in the manner recommended by Dr. Kidder. Then placing the sponge on the right corner of the right eye, and making the current strong, globes (*a*) of a rainbow-colored appearance moved slowly from the left to the right, but died out as they came in contact with (*b*), another ball or globe of light the same size but different in character, as the light in (*b*) radiates from the centre to a bright yellow ring. As the two globes met, the (*a*) changed into purple and disappeared, while (*b*) moved downward, keeping on the right side (*c*), raining dark blue spots, and making an instantaneous disappearance.

Fig. 10. A trembling light, and bright spot (2), dying as it leaves the ring — and by rubbing the sponge from left to right the form 3 appeared; half red and blue shot out with a strong light at the left side, but very small. This was followed with small flashes (b, the current being kept to the right eye thirteen minutes. Fig. 10 is on first page.

Fig. 9.

Fig. 11.

Fig. 11. Placing the sponge now to my left eye, and making the current strong, I saw stars in about four seconds. Rings vibrating came from the ends, growing weaker as they approached the centre, where they died out entirely. This was very beautiful. It commenced with yellow at the first ring; about the fourth or fifth ring they became red, and disappeared in a faint blue.

Fig. 12. Producing this, I placed the sponge wetted with water to my right eye, and in a few seconds the spots (*a*), of a blue color, first came to view; then moving the sponge to the right side of the eye, bars appeared and disappeared; these were of different colors; there were sometimes from three to four bars upon one another, in the manner in which crystals are observed in wine. Moving the sponge to the orbit and pressing hard, (*a*) came to view and moved to an obtuse angle the same as in Fig. 7. Fig. 12 is on first page.

Fig. 13. Two hours after the former experiment I used the current again, moving the sponge in a line from temple to temple, running over the forehead, when on a sudden I placed the sponge over the orbit of the right eye, and made the current strong. There appeared a bright light, dying out in the centre, when it changed to an oval shape as bright as a calcium light (*a*). In about two seconds a blue ring formed around (*a*) and enlarged, when another yellow ring formed around the blue (*b*) dying out at the edges (*c*); then it moved as a pendulum of a clock (*aa*), when flashes or small jets came from the rim, finally dying out Now moving the sponge to the corner of the eye by the bridge of the nose, and pressing, a general explosion took place, as shown by the Fig 14.

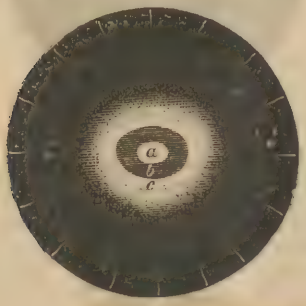


Fig. 13.

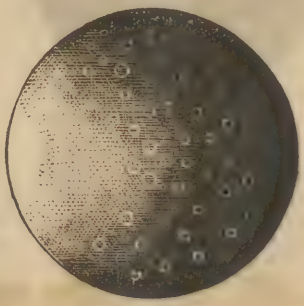


Fig. 14.

Fig. 14. A white light dying out at the centre of the field, with small rings running from right to left, and dying before reaching the rim. These were of a bright red color, and blue when dying; a few waving lines were also visible.

The function of hearing is best exercised by currents of high intensity though of low quantity. The current on a comparatively short and thin wire, is to the sensation what may be called sharp, cutting. The modified effects produced by using a condenser so as to lengthen the spark of the current between separated electrodes, from a definite coil, does not extend to produce specially different physiological results.

All Dr. Kidder's 5 post (4 coil) apparatuses have the qualities that are more expensively obtained, in the smaller machines as well as in the larger. The smaller the coil, there is necessity for equal, or even greater expense, *if made* to obtain the qualities of currents like those of the larger coils. However extra large coils when constructed to have currents that reveal *colors* to the vision with a very mild current, necessitates still more expensive apparatus.

Through its allotropic powers, the nervous system not only presides over the action of organs and the replenishing of their wasting tissues, but also to a great extent, it provides remedy for adverse adventitious impressions, as poisons, etc. For example, typhoid fever is seldom taken except when the nervous system is in a somewhat depressed state; and always when any kind of disease is prevalent, the condition of the nervous system very much determines whether attacks by that disease will be experienced, which is a fact well known. By such offices of the nervous system, which seem almost miracles, like a guardian angel, undoubtedly we are daily protected from many unseen and unknown dangers surrounding us.

In regard to the artificial nerve, previously mentioned in this work, it may be here stated that the conditions may be modified with substantially the same principles; the specific gravity of the acids may be somewhat varied—one quality of acid alone can be made to answer for both the inactive element

and the element thrown into action. Other elements, omitting iron, may be substituted for the one to remain inactive and the one to be thrown into action. An exciter, as an iron wire not rubbed, but already active, may be used—attrition or concussions with other substances, and even an electric current, may be used as exciters of the allotropic influence.

If the nitrogen and oxygen and hydrogen existing in the nerve were all in the form of nitric acid and water, the influence would be destructive rather than appropriate to fulfil the regulated uses of the nervous functions; but the combinations in which they enter, forming other substances, from which these elements may be eliminated in a manner regulated to the very small amount required, manifest the perfection of their adaptability for the most delicate and exceedingly varied adjustments individually requisite for the quality and degree of effect required. The elimination of phosphorus, etc., through nervous action from its special association in the nervous substance, has attracted much attention.

As the influences of the nerves are of manifold character in their presidency over motion, secretion and digestion, even so in regard to sensation—their influences are also manifold; for there are many characters of sensation,—smarting, itching, pricking, different characters of aching, stinging, etc., as pain produced by heat is different from pain produced by cold. And the sensations of hunger and thirst are different from each other. The sensations of taste appear illimitable in their variety, even as that of smell also we cannot limit; for it is not known how many different substances affect this sense differently—all these through the nervous system.

And even as different qualities of sensation are brought to the brain by the nerves, recognizing differences in the character of the stimuli, even so we may look for a controlling nerve force going out from the brain in certain conditions, which represses sensations from certain stimuli, which, under ordinary circumstances, produce pain. For example, soldiers, in the excitement of battle, are often unconscious of severe wounds, from the absence of pain until after the mental excitement has passed away.

Now there is a range in the quality of induced electricity which, to a certain degree, excites *repressing power* of nervous influence *over* that which is the sensation of pain. Induced currents of a high intensity and low quantity, if of the proper range in this respect, as A D, or more especially A E, in Dr. Kidder's Improved Apparatus, and properly used, will, in its mixed effects on the various nerves, act more to repress pain than to excite sensation.

The author has made reference to the allotropic influence as the *nerve influence*. The conditions may be so arranged that the allotropic changes will move at precisely the same rapidity as those of the vital influence along the nerves which produces motion and sensation. But as these allotropic changes, under certain conditions, give rise to currents of electricity, we must be prepared, *if such conditions are found in the nerve*, to accept the view that the *electricity* which is produced by the allotropic influence may *execute* the vital mandates by exciting other allotropic changes in the elements of organs and parts; for we have seen (page 6) that electricity produced allotropic changes, and allotropic changes, as effected in the artificial nerve, gave rise to those vibrations in conductors which we call electricity, which could be made to produce motion, sensation and other vital phenomena. The conditions of the artificial nerve were so arranged that, when a certain allotropic state was established, that artificial nerve *was a galvanic battery*. Now a nerve belonging to the living organism, appears to have precisely the same conditions—we have the neurilemma to contain the elements, we have the myeline or the white substance of Schwan as one of the elements, and we have the axial band as the other element. Therefore, the nerve is not only a medium of allotropic changes and a conductor of electric currents, but it also appears to be *itself a galvanic battery*, which is active or inactive, according to the allotropic conditions of its elements.

How slight an influence is sufficient to cause allotropic transformations and consequent powerful chemical unions may be instanced by means of sounds of certain degrees of pitch causing the explosion of certain substances.

So we find that the allotropic condition which moves slower than electricity is, in one of its offices, approximately as it were, a switch to throw the nerve,

as a galvanic battery, *in* and *out* of action! As we know that electricity can excite allotropic changes, and that allotropic changes produced by any means, can excite electricity;—it seems that in either case we have explanation enough to account for the allotropic changes necessary to bring about the activities of functions and the nutrition of parts.

But the allotropic transformation was in somewhat different relation to the battery from that merely of a switch to connect and disconnect the poles. The elements of the nerve is not a galvanic battery *until made so* by the allotropic change; in one moment the nerve is a galvanic battery, and in another moment it is not; therefore this allotropic change is the primordial force *within the body* for the establishment of the nervous influence, though electricity produced thereby may be the agent to *execute* the design by establishing certain other allotropic conditions in the elements of muscular tissue, which cause contraction, and in the brain to produce sensation, and in other organs to advance the processes of secretion, digestion, assimilation, etc., etc. Allotropism the primordial force within the body—within the constitution of the organs concerned—but outside of the body a thousand agencies operate as impressions to establish these allotropic changes; they are the stimuli which excite us to action, quicken our hopes, and furnish us constantly with the evidences whereby we know that we live.

The question may be asked, Why are different ratios of quantity and intensity of induced electricity necessary severally to excite the functional activities of vital parts? It may be answered that chemical changes are effected by vital activities, the elements concerned being *electrolytes*. The electrolytic activities in the different organs are varied, and their susceptibilities to allotropic changes are different; therefore a different ratio of quantity and intensity of electricity is required to bring them severally into action.

The author has endeavored to present this seemingly interesting subject with consistent brevity, and at the same time he has made such repetitions of the subject, with varied phraseology, as is perhaps requisite to be well understood, considering the imperfection of his language.

To cure nervous headache, place on the back of the neck close to the base of the brain, a large wetted sponge attached to the conductor leading from the post E, while the positive pole from A or B is in *both hands* by some means, or under both divested feet—*both* to give large surface because much power being comfortable at the base of the brain, large surface is needed for the other electrode. Frequently headache is entirely cured in half a minute by this mode of applying the proper current. Do NOT apply the current on the forehead, for it is very sensitive, and such application is useless and injurious if applied strong. Without divesting the feet, the practitioner can conveniently test the

current on himself thus: By means of an improved patented sponge-holder, which has an extra hollow metallic cylinder surrounding the insulating wooden handle of the holder, the positive pole, A, can be led both to the electrode held in the left hand, and also, by an added conducting cord to the outer metallic cylinder of the sponge-holder, without communicating at all with the other pole which latter is the negative, E, led through the centre of the insulating wooden holder to the base of the brain.

To cure a severe burn, place the pole from E in a tub of water; give large surface to this negative electrode by adding metallic plate of any kind resting on the inside bottom of the tub. Place the part burned in the water, and apply the positive pole from the posts A or B under both feet to give large surface. A strong power thus applied will be comfortable to the burn, relieving the pain altogether. Continue the application for an hour or two, or until the pain will not return on ceasing the application. Protect the part from the air, as a precaution; but cases are known in which it was not necessary after electrical treatment of this kind.

The above cut shows how to exercise the function of vision with the current from A, E, or B, E. Place to the eye a large wetted sponge on a sponge-holder attached to the negative conductor of the post E; then, with a very mild power

of the machine, close the circuit by merely touching with the finger the electrode (as a metallic cylinder or handle) attached to the conductor from the post A or B. Use moderately slow interruptions of the spring, and increase the power gradually, first by applying more surface of the finger or hand to the positive electrode, and perhaps further by withdrawing the tube from the helix. The light can also be seen by placing the sponge on the side of the head near to and on a horizontal plane with the eye, or at the corner of the eye. Persons totally blind from cataract will perceive the light caused by the electric current precisely as well as those not so blinded.

Because Duchenne records that he injured the eyes of one of his patients by the use of a galvanic battery of many cells without an induction coil, some persons, from confounding different apparatuses, seem to fear to test or experience the effect on the eye from an induction apparatus. If they will read carefully Duchenne's article, they will find that he makes a clear distinction as to apparatuses. He had applied an induction coil with benefit to his patient; and that special coil not being conditioned to show light to the eye, he erroneously concluded that the reason was that it was an induction apparatus, not knowing that an induction apparatus could be constructed so as to exercise the function of vision with a very mild power and in a perfectly harmless manner, by a current wanting as to ordinary chemical effect; whereas, if the light were caused by a large number of *cell* batteries, or elements, the eye would be injured by the chemical effect of the current.

DR. JEROME KIDDER'S

HIGHEST PREMIUM,

VITALIZING,

GENUINE SIX AND NINE CURRENT

ELECTRO-MEDICAL APPARATUSES,

"Your method of varying the *Primary* as well as the induced currents, surpasses all other devices I have studied, as tested by scientific instruments and by physiological effects."

R. Ogden Doremus, M.D., Prof. Chemistry and Physics in the N. Y. City College, and Prof. Chemistry and Toxicology Bellevue Hospital Medical College.

Gold Medal Awarded to Dr. Jerome Kidder,

at the Fair of the American Institute in the fall of 1875, for the best Electro-Magnetic Machine either here or abroad. The value of this award is shown by the status given to it by the Institute, thus: "XII.—THE MEDAL OF PROGRESS. This Medal (of gold) is to be awarded only for a machine, product or process which

shall be adjudged so important as to make a decided advance and great improvement, and be satisfactorily shown TO BE A DISCOVERY OR INVENTION OF THE FIRST ORDER OF IMPORTANCE AND VALUE IN SCIENCE OR IN THE INDUSTRIAL ARTS." This is the only genuine gold medal awarded for Electrical Apparatus by the American Institute, and, as far as he can learn, the only one from any Institute or Society. And in the years 1876 and 1877 the Diplomas for maintained superiority were awarded; the shield of that of 1876 is given below.

Dr. JEROME KIDDER'S ELECTRICAL DEPOT,

820 BROADWAY, NEW YORK.

Summary as to Different Physiological Qualities of Electricity.

Currents of different qualities have not only different characters of sensation, and different effects on muscular irritability, as recognized by all who have carefully scrutinized in regard to these varied electrical phenomena, but also **one quality** even when so weak in **power** as not to produce any pain, but rather a pleasant sensation, will show flashes of light when properly applied, as with large surface of wet sponge over the closed eye.

Secondary currents produce light to the eye, that is, they exercise the function of the optic nerve *without producing pain*, only when the tension of the current is increased to a certain degree in ratio with the diminished quantity. This effect is shown *best* by using the negative sponge at the eye, and having not very slow, but moderately slow interruptions by the vibrating armature, as produced by Dr. Kidder's apparatus, yet the proper quality as regards tension or pitch is requisite.

Another quality of current, even when the current is made strong enough to produce pain, will show no light to the eye—will not exercise the vital function of the optic nerve.

The preceding facts show conclusively that electricity can be varied in quality so as to produce different effects on different vital functions.

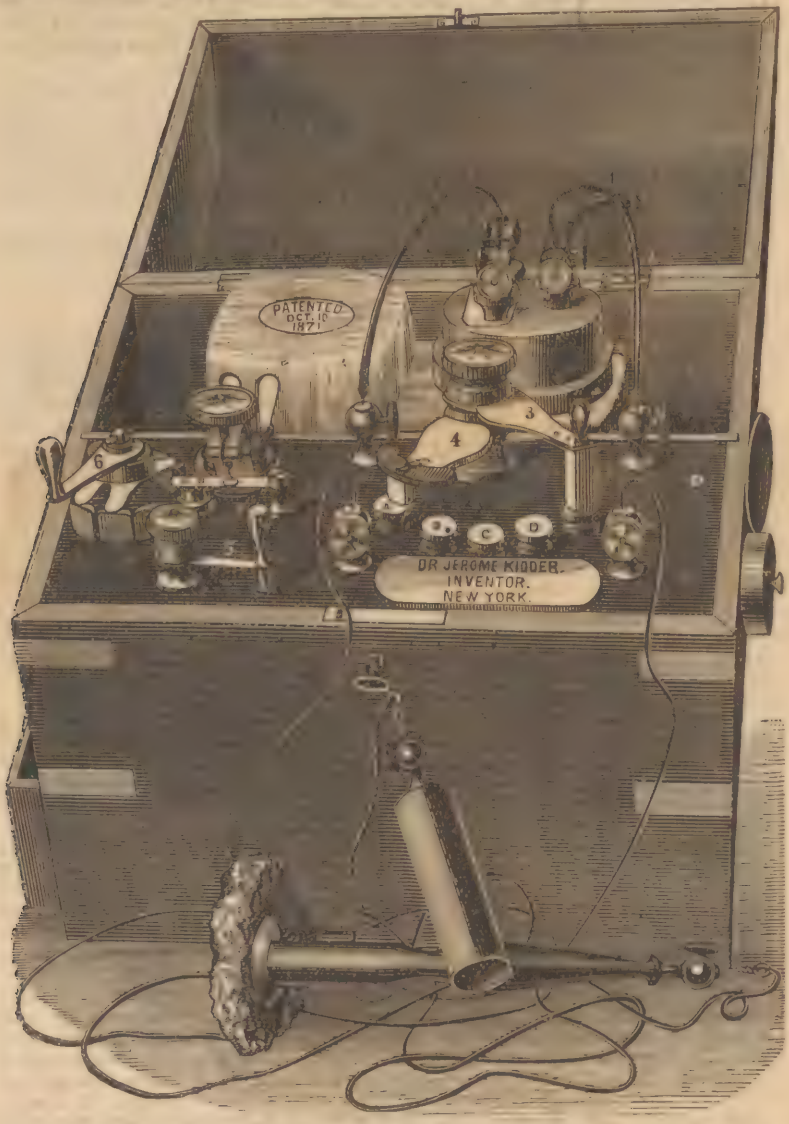
It must not seem strange to find electricity produced in many different qualities to have varied effects. There are, indeed, other facts recognized as true, and which might seem stranger still—for it is well known to all chemists, that the same proportion and kind of atoms may form substances so different in their nature as to be recognized as entirely different substances. For example, spirits of turpentine and oil of bergamot are identical in composition, being composed of ten atoms carbon, and eight of hydrogen, and the difference is recognized as merely that of the allotropic conditions and arrangement of the atoms. Also, **light** is recognized as the effect of vibrations or wave motions in the ether, which is everywhere; and the different colors result from the different length of these waves. (See Prof. Draper's *Chemistry*, and other scientific text-books.) And yet, even the difference in the character of the vibrations or wave lengths of the ether gives a difference in their chemical effects; for, indeed, it is known to be chiefly the yellow ray which causes the absorption of the carbon from the carbonic acid gas in the atmosphere into the solid form of a tree, by the influence of the sunlight falling upon its leaves. And it is the indigo ray which is chiefly concerned in causing hydrogen and chlorine to unite by passing light through a glass vessel containing a mixture of the two gases.

Also, sound results from **vibrations** in the atmosphere or other media. Yet sounds may have differences in pitch, and also differences in qualities of tones, having the same pitch. Its effects are what the spirit of man receives as jarring discords or sweet harmonies, and successions and qualities of tones, that inspire the emotions of courage and hope, or produce solemn and mournful feelings.

Considering the fact that mere variations or modifications in vibratory or wave motions produce differences in effects, we should not think it strange, but should rather **expect,** that the magnetic influence which excites the electricity in metallic helices would produce currents modified in qualities, by varying the physical condition of those helices; for, by varying the helices, we vary the medium of vibratory or wave motions resulting from polarizations, whose phenomenon is electricity.

It is because the terms *quantity* and *tenson*, as applied to electricity, do not express the real distinction in its qualities, that the terms are so generally misunderstood when thus used. The term *intensity* is often misused for power, but the difference is as plain as the difference between *loudness* and *pitch* in regard to sounds. A musical string *conditioned* for a given pitch *does not change that pitch* by a greater or less force of the blow causing it to vibrate; it simply changes its *loudness*. And in regard to electricity, the magnetic force upon the helix determines the power or strength of the induced current; but the intensity or tension, that is *quality*, is determined, not by the amount of magnetic force upon the helix, but by the *physical construction of the helix itself*. (See other pages of this manual.)

No. 1, Physicians' Office Electro-Medical Apparatus, large size, having four coils and ten currents. By means of the switch 5, the second coil can also be thrown into the primary circuit at option. The current from any of the ten combinations is brought by the arms 3, 4, to the two front screw-cups to which the conductors are attached. By moving the lever 6 to the right or left, the currents are momentarily reversed in their direction; and the pole that feels the strongest by changing when in the hands is always the negative.



Polished walnut case, with brass-bound corners, and drawer underneath the helix. Size of case, 10½ inches long, 9 wide, and 7¼ deep. The brass works are nickel plated. Price, including Handles and Sponge-holder, $50.00.

Veneered rosewood case, bound and ornamented with German silver. Price, $57 50

There is sometimes demand for a still larger range of effect, and to meet this demand a four-coil helix is furnished, developing ten currents from the different combinations produced by varying the two posts selected for the positive and negative. The added coil is conditioned to produce electricity in such a ratio of quantity and intensity, when used in combination with all the other coils, as will go *beyond* the range of the greatest effect on the muscles, and *into* the range of soothing electricity; and, with mild power, it will exercise the function of vision showing glimmering light, without producing pain. The power of these currents is increased or diminished at pleasure. This fourth coil is in apparatus No. 1, No. 3 and No. 5.

No. 2. PHYSICIAN'S VISITING MACHINE.

No. 2 is a four coil apparatus, producing ten currents of electricity, of compact form, with an upright stopper battery, constantly ready for use many weeks without any attention. The coil box stands upright in one end of the case where it is hinged. By springs underneath the hinges that fasten the coil-box to the case, the battery is connected to operate the coils when turned down to a horizontal position, as seen in the figure. If ever desired, the coil box can be detached and connected with any other battery by the two screw cups on the back part. This machine is about 6 inches long, 3½ wide, and 6 inches deep, and has a metallic handle on the lid for carrying. It costs as much, if not more, to put the qualities of the ten currents in a small machine as in a large one. Price, $27.00. Nickel plated, $30.00.

No. 3.

No. 3 is another form of Physician's Visiting Machine. It has ten currents of the same qualities as those of Machine No. 2; but the helix remains horizontal in the case, which is a little larger than that of No. 2. With rubber stopper battery. Price, $27.00. Nickel plated, $30.00.

All the advanced scientific practitioners use and recommend Dr. Kidder's improved apparatuses, because of the genuine modifications of electricity developed on the differently conditioned coils, and the means which command their perfect operation.

The only authorized testimonial from Prof. Doremus, shows the decided superiority of these apparatuses.

☞ Be careful to examine the date and to whom addressed of all pretended testimonials from Prof. Doremus.

No. 4.

OFFICE AND FAMILY MACHINE SHOWN WITHOUT THE LID.

No. 4 has three coils, and six variations of the qualities of the currents, and is operated by one open battery, which is for weeks and months constantly ready for use, without changing the fluid, and a bottle accompanies, into which the fluid can be poured whenever desired. Price, with switch arranged to use the second coil in the primary circuit, when desired, $20.00. Price without this arrangement, $18.00.

The Apparatus No. 4 and No. 5 are most in demand. Though presenting a good appearance, they are not made for show. The coils of all the genuine Dr. Kidder machines are constructed with reference to the medical qualities of electricity without regard to expense—thus DIFFERING from all the other induction apparatuses, which are constructed to get up a *hurt* influence from the cheapest possible coils.

Copy of the Judges' Report in Department III, Group 5, Division B, at the 46th Exhibition of the American Institute, held in the City of New York, October and November 1877.

No. 720.—ELECTRO-MEDICAL APPARATUS.—JEROME KODDER, M. D. Kodder's Electro-Medical Apparatus in general; to which was awarded in '75, the Gold Medal of Progress, stamps it at this date, its superior qualities for electro-therapeutical purposes, and we AGAIN ——— with pleasure the DIPLOMA for MAINTAINED SUPERIORITY be awarded him. Especial ——— should, however, be made of an exceedingly compact Faradic apparatus, which Dr. Kodder has devised during the past year. The apparatus is constructed, so far as relates to the motive powers, after the pattern of Gaiffe's celebrated machine, but the bobbin and electrodes are peculiar to the manufacturer's larger batteries. The merit of this apparatus consists in its ingenious combination of old and new ideas, resulting in the construction of an instrument which for its size gives a current of strength and variations of quality, superior to any other now in use. We recommend that to this little apparatus, be awarded the medal of superiority.

GALVANO CAUSTIC AND GALVANIC APPARATUS.—The merits of the galvano caustic apparatus were fully pointed out in the report of '75. This apparatus is substantially the same in construction and thermic power now, as then, but after a more extended test of its merits, and a better knowledge of other forms of caustic batteries, we agree that the one under consideration is entitled to the MEDAL OF SUPERIORITY. Concerning the constant current batteries, nothing can be said further than was given in the report of last year.

☞ Diploma for Maintained Superiority.—For Electro Medical Apparatus.

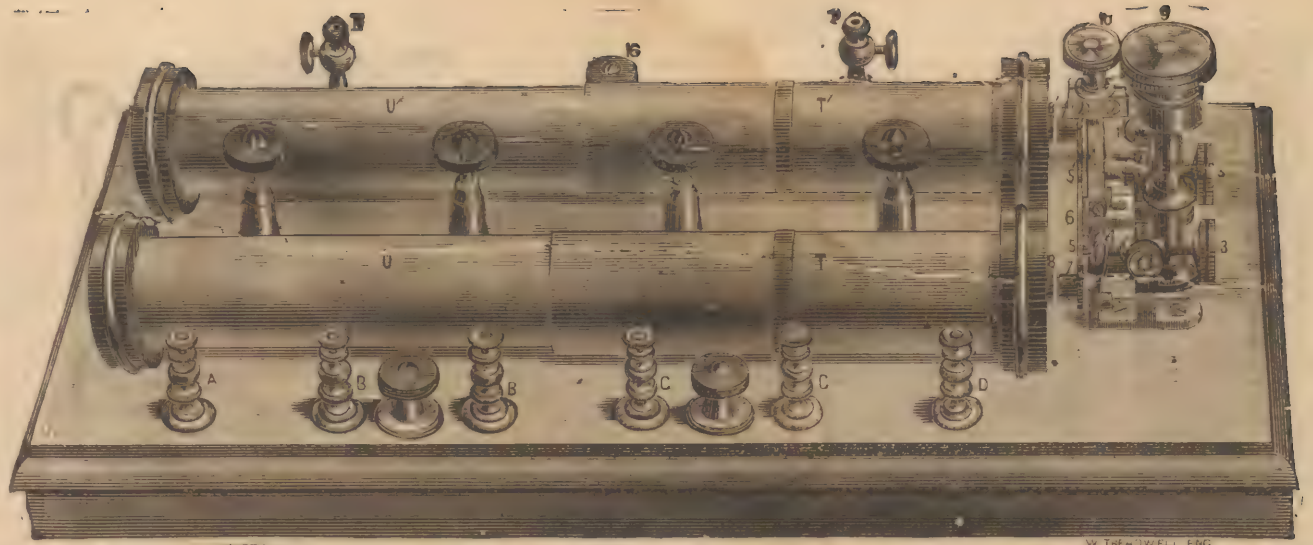
☞ The Medal of Superiority.—For an exceedingly compact Faradic Apparatus.

☞ The Medal of Superiority.—For Galvano Caustic and Galvanic Apparatus.

A true copy of the report on file.

JOHN W. CHAMBERS. *Secretary.*

Dr. Jerome Kodder's Electro-Medical Apparatus (*No. 5*, the lid not shown) has four different electrodes and coils arranged to be used in various combinations, producing ten different qualities of electricity. Price with Hydrostat Tip Battery, $97.00. Price, with open battery, $24.00. Patented in the United States, England, and France.



EQUAL ALTERNATING CURRENT APPARATUS.—It is well known, or should be, that the **initial current** of the so-called alternating induced current, which has in some instances been called "to and fro," is very weak—not perceptible to the sensation under ordinary circumstances—while the **terminal current** produces muscular contractions, etc. These two may be represented by the large and small arrows, pointing in different directions, thus:

The fact that the **initial** induced current is comparatively so weak, has been noticed by various writers; **and it can be proved** by controlling the vibrating armature with the thumb and finger, so that we may know when the circuit is closed and when it is broken, the electrodes being in the hands.

The cause of this is that the initial current is produced when the vibrating spring touches the point. So, that the primary coil thus metallically closed receives the induced influence within itself instead of the human body receiving it, which is, compared to the metals, a very poor conductor. But when the primary coil is opened by the vibrating spring, there is then no metallically-closed coil to receive the terminal induced current, which is in the other direction, and the human body receives it; and it is varied in quality (as noticed in other pages of this work) according to the physical condition of the helix in which it is received.

Dr. KIDDER patented in 1866 an extra apparatus, entirely unique, by which **equal** alternating currents are produced. It is accomplished by means of **two systems** of helices, their circuits **alternately** being closed and opened by means of a double-armed vibrating arrangement; and the currents are properly represented thus:

Currents of equal power succeed each other in opposite directions; also, the power of each may be varied at pleasure. This apparatus has also many different qualities of currents. The same quality of current showing light to the eye, shows more light when equal alternating than even the negative does when the terminal currents are all turned in one direction, which may be done simply by moving a small knob.

SECURED BY PATENT IN 1866. **Price of Helices, with Nickle Plated Metallic Works, from $55.00 to $100.00.**

Smee's elements suspended from rubber stopper in square jar, 3¼ inches in diameter, $4.00.

Smee's elements suspended from rubber stopper in round jar, 3¼ inches in diameter, $5.00.

Enlarged view of the great circle, wheel-armed compound switch, elector of consecutive numbers of batteries, and to increase or diminish the number of cells included, either with or without interrupting the circuit. This differs from all other current switch cell electors, in its adaptation to throw out of the circuit any number at the begining, as well as at the end, of the series. Patented.

PRIMARY CELL BATTERY, SHOWN WITHOUT THE LID.

With the extra attachments for electing various cells with or without interrupting; also for interrupting and rapidly reversing the current. The elements are affixed to a patented improved support allowing their ready examination at any time.

Primary Cell Battery, 12 cells, each cell 2½ inches long, horizontal measure, 1⅜ wide, 4½ deep. Polished walnut case, 10½ inches long, 7 wide, and 11½ deep. Without the extra attachments. Price, $20.

Primary Cell Battery, 18 cells, carbon and zinc elements, size of cells, 2½ inches long, horizontal measure, 1⅜ wide, 4½ deep. Polished walnut case, 15 inches long, 7 wide, 11½ deep. Without the extra attachments. Price, $30.

Primary Cell Battery, 18 cells, carbon and zinc elements, size of cells, 2½ inches long, horizontal length, 1½ wide, 4¾ deep. Polished walnut case, 17 inches long, 7 wide, 12¾ deep. Without the extra attachments. Price, $40. 24 cells, $48.

The above prices include, with the battery, two conducting cords, and two sponge-holders.

Dr. Kidder has a patented improvement which can be added to the above batteries, so as to increase the number of elements, without interrupting the circuit when the slide is moved; a very convenient arrangement for many cases; also by locking back a spring the current is interrupted when the slide is moved; when properly located, the current is alternately closed and interrupted by moving one of the levers. Also, the current can be thrown rapidly and alternately in opposite directions. These arrangements add a value to these batteries not possessed by any other manufacture. Price, with all these improvements, is $6 extra; with slide, and without the levers for interrupting, $3 extra.

Batteries consisting of 24 and 32 or more cells of the larger size, more especially for hospital uses, varying in their prices, according to finish, kept on hand and also made to order.

A superior Pocket Induction (Faradaic) Apparatus, having very expensive coils so as to get the desired ranges in the qualities of currents, in a very small space. It operates by means of a very little bisulphate of mercury, gives very strong power, and is more satisfactory in its operation than any other pocket apparatus made in any country. (See award by the American Institute otherwhere in this catalogue.) Two handles and sponge-clasps with conducting cords accompany each apparatus. Price with three coils and six different qualities of currents, $20. Price with four coils and ten different qualities of currents, $24.

Dr. Kudder's Galvano-Caustic Batteries are unequalled as to their efficiency and convenience of operation. The elements are made movable horizontally in their relation to the fluid of the cells, so as to substitute continuously battery fluid which has recovered its allotropic power from having been released from action. One of these forms, consisting only of two cells, each 3¼ inches long, 2¼ wide and 4½ deep, will retain a platinum wire No. 19 at a white heat constantly for more than a quarter of an hour. See the cut below.

Small and powerful Galvano-Caustic Battery. Patented, 1870

The price of this kind of battery, constructed to have the highest power for the size, is $50.00.

Same size of battery but of cheaper construction for loop and minor operations, price $25.00.

These are also made to suspend the elements over the cells. Price, $5.00 extra.

Dr. Kudder has perfected instruments that will sufficiently withstand the heat of these powerful batteries which he warrants to be superior to any similar batteries yet constructed.

TESTIMONIALS showing the superiority of DR. JEROME KIDDER'S

ELECTRO-MEDICAL APPARATUS.

The Modified and Manifold Qualities of Electricity Vindicated and Sustained.

OPINION OF PROF. DOREMUS.

The following testimonial from R. OGDEN DOREMUS, M. D., Prof. Chemistry and Physics in the N. Y. City College, and Prof. Chemistry and Toxicology, Bellevue Hospital Medical College, refers to the superior merits of Dr. Kidder's Apparatus:

"COLLEGE OF THE CITY OF NEW YORK,
"*Cor. Lexington Avenue and Twenty-third Street*,
"New York, August 9th, 1871.

"DR. JEROME KIDDER:

"*Dear Sir*—Within the past few weeks I have carefully examined the construction of several forms of your Electro-Magnetic Machines.

"I find that they differ in philosophical principles from any I have before investigated, and that they possess, in addition, many mechanical improvements.

"By your ingenious modifications and combinations * * * * helices of wires of different lengths and thicknesses, I find that the electric effects are materially altered in a manner not accomplished by any other machines.

"These variations I have tested by galvano-metric, galvano-thermic, and other scientific instruments.

"I have also experienced the va. 'ed effects produced upon the human system in my own person, and have witnessed the same in others, on applying the currents of electricity from the various coils, and through conductors of graded lengths and sizes.

"Thus the eye can be stimulated to appreciate various amounts of light without pain; or slight pain may be experienced without so exciting the organ as to perceive light. By changing the flow of the mysterious agent, its influence may be felt at the wrist, in the forearm, or higher up near the shoulder, in addition to all the variations of frequency, direction, and power usually provided for in electro-magnetic machines.

"I confess I was surprised at the agreeable nature of the electric current. Most persons dislike the peculiar sensations experienced from the ordinary machines, and, after a first trial, decline a repetition of it. All such would appreciate not only the bearable but the pleasant effects produced by your arrangement.

"Thus you have placed in the hands of the skilled physician most valuable modifications of a power which is destined to solve many of the mysteries of our organization, and to relieve many of the ills of life.

"In conclusion, I would state that your method of varying the *Primary* as well as the *Induced* currents surpasses all other devices I have studied, as tested by scientific instruments and by physiological effects.

"I most heartily commend its use to my medical brethren as the instrument for research in this attractive field of medical inquiry.

"I have the honor to remain,
"Your obedient servant,
"R. OGDEN DOREMUS, M. D."

"USEFUL INVENTIONS.

"The employment of electro magnetism in medicine is beginning to assume a proper importance since the investigations of Matteucci, Du Bois-Reymond, and others have thrown a flood of light upon obscure nervous affections, and have led to a proper appreciation of treatment. That electro-magnetism is hereafter to form no inconsiderable part of this treatment cannot be denied, and we must welcome any invention which tends to place this agency within the reach of the practitioner.

"KIDDER'S ELECTRO-MAGNETIC MACHINE

is one of the most useful inventions of the kind with which we are acquainted. It has six currents, differing in their magnetic, electrolytic, and sensational effects. It is very portable, and very easily kept in good condition. We have witnessed its frequent employment in various medical cases, and the results have convinced us that, in the hands of the judicious scientific physician, a large class of diseases are more amenable to such treatment than to any therapeutical means."—*American Medical Times.*

It is only in order to show how IMPORTANT are the facts which by strict investigation Dr. Kidder has discovered in regard to the many different qualities of electrical currents and the laws governing the production of the same, and to impress these facts on the attention of the public, that the following is quoted:

From the New York Tribune.

"At the Montreal meeting of the American Association for the Advancement of Science, in 1857, an evening was devoted to the splendid electrical phenomena which can be produced by the use of a powerful battery with the Ruhmkorff coil. It was stated that this coil was, as it really is, a triumph of American genius; that nothing could be procured in Europe which would compare with it, and that the shock produced was amply sufficient to kill fifty men. This latter statement, based on the known physiological effects of a shock from a current of much less power, has never been questioned among purely scientific men, that we know of, and the man who should propose to test it personally would be looked upon very much as would a man who should propose to test the effect upon himself of prussic acid or a flash of lightning.

"But Dr. Jerome Kidder, of this city, has dared to do it. He took this shock the other day in the laboratory of the Cooper Institute, and he is alive and well notwithstanding. The battery consisted of six of the large Bunsen cups, and the Ruhmkorff coil contained sixteen miles of wire. Prof. Vanderweyde prepared the apparatus, and vouches for the experiment.

"Dr. Kidder was led to doubt * * * * * * by his experiments in endeavoring to secure the best electrical machine for medical purposes. To the quack, electricity is electricity, as an egg is an egg; but the **SCIENTIFIC PHYSICIAN** (and electricity is beginning to be used in this country by physicians, though not to so great an extent as in Europe, where it is even introduced into the hospitals,) demands an apparatus from which he can secure galvanism, or Faradaic currents—so called from Faraday, who discovered the induced currents—separately or in combination, of any required power, and of any required tension or capacity of penetration. Galvanism is required, for instance, in mercurial diseases, where minerals are to be thrown out of the body, while the Faradaic current is required for action upon the sentient or motor nerves in paralysis, rheumatism, and neuralgia. The use of the variation of power and tension is evident. All these Dr. Kidder has succeeded in obtaining by the use, now patented, of different helices, singly or in combination with each other, or with the galvanic current. Finding that the longer the wire used the greater the tension, and consequently the greater the ease with which the current is conducted through the body, he argued that the enormous length of the wire in the Ruhmkorff coil must render the current so highly conductible that, in spite of its great power, it would not lacerate the tissues of the body. He has staked his life on his opinion, and won it."

[There is a mistake in the above in regard to the Ruhmkorff coil being an American invention, for it was Page, and in Europe, who invented the improvement in the winding of this coil, which is practically followed by all makers of such coils of the present day. J. K.]

VALENTINE MOTT, M.D., for many years *Professor in the New York Medical University*, until his death, in the summer of 1865, recognized the superior merits of this apparatus by the following testimonial:

"Electricity, as a remedial agent, is invested with increased interest and importance, as the apparatus employed is more perfectly adapted to such use. Dr. Jerome Kidder, of this city, has labored successfully to produce a really superior Electro-Medical Apparatus. The machine which he has brought forward, secured by Letters-Patent of the United States, has six currents, having each different qualities, as he has fully proved by magnetic, chemical, and physiological tests, whereby they plainly exhibit their difference of Magnetism, Galvanism, and Faradayism—the latter modified by tension, so as to be concentrative or diffusive. And it is perfectly controlled in power. These features, and also improvements to command their perfect operation, constitute them among the useful auxiliaries in therapeutic practice."

"Dr. Kidder has undoubtedly succeeded in producing the best and most appropriate machine of the kind. Too much praise cannot be given to them, principally by reason of the various qualities of the currents they produce, the usefulness of which can only be doubted by persons unacquainted with the theory and practical uses of electricity as a remedial agent.

"P. H. VAN DER WEYDE,
"Late Professor of Chemistry, New York Medical College, Cooper Union, and Girard College, Philadelphia."

Useful Inventions.—"The employment of electro-magnetism in medicine is beginning to assume a proper importance since the investigations of Matteucci, Du Bois-Reymond, and others have thrown a flood of light upon obscure nervous affections, and have led to a proper appreciation of treatment. That electro-magnetism is hereafter to form no inconsiderable part of this treatment cannot be denied, and we must welcome any invention which tends to place this agency within the reach of the practitioner.

"KIDDER'S ELECTRO-MAGNETIC MACHINE

is one of the most useful inventions of the kind with which we are acquainted. It has six currents, differing in their magnetic, electrolytic, and sensational effects. It is very portable, and very easily kept in good condition. We have witnessed its frequent employment in various medical cases, and the results have convinced us that, in the hands of the judicious scientific physician, a large class of diseases are more amenable to such treatment than to any therapeutical means."—*American Medical Times.*

"Having performed several cures which gave me infinite confidence in your machines, &c. * * * I am surprised at finding Electro-Magnetism so little advocated, etc.

"EDWARD SCHIEFERDECKER, M.D.,
"Wittenberg, Mo."

"I am in possession of one of your Electro-Vital Machines. I have used it for nearly two years, and find it to be the best remedial agent for nervous complaints that we have ever found.

"JOB HARMON, M.D.,
"Tipton, Indiana."

"The machine has worked admirably. We have several kinds of machines about here, but none give satisfaction equal to yours.

"L. D. ROSS, M.D.,
"Benson, Rutland Co., Vermont."

"The battery that I purchased of you about a month since is working admirably. I have effected two interesting, if not remarkable cures with it already.

"Dr. E. J. GROOM,
"Bristol, Pa."

"I have examined several different instruments, a French, and ——, and a very neat one with, &c., but I am satisfied that yours is the instrument, and will not undertake the cases on hand without it.

"Very truly yours,
"L. R. BOYER, M.D.,
"209 Central Avenue,
"Albany, N. Y."

"I have your machine in competition with several other makers, and use it daily in preference to all others.

"H. P. BAKER,
"Odessa, Newcastle Co., Del."

These certificates of cures are published, not for the information of those intelligent physicians in New York and elsewhere who already know what the proper qualities of electricity can accomplish, but for those physicians who have not given attention to the therapeutic uses of electricity.

Mr. A. J. Steele was marvellously restored to health by Dr. Jerome Kidder's Vitalizing Electro-Medical Apparatus. Those in the West and in different parts of the country who have learned of the wonderful cure of Mr. A. J. Steele, of paralysis, at the age of 54 years, and the remarkable restoration of physical elasticity, vigor and power of endurance which, as he averred, might well arouse the envy of the greater proportion of such of his young countrymen who could boast of but half that number of years—should know that it was Dr. Jerome Kidder's Six-Current Vitalizing Electro-Medical Apparatus which, by the Divine will, effected this important cure.

"Dr. JEROME KIDDER:

"*Dear Sir*—About the 1st December, 1863, my right leg was almost paralyzed, so that I could use it only with great difficulty. I learned from the physicians that it was an affection of the sciatic nerve; and electricity was the only remedy proposed by several physicians, all of whom said it was a bad affair. After obtaining three or four operations with a physician, I heard of your machine through a neighbor. I purchased one, and the result with it is a cure of my leg by my own use of it. I feel very grateful to you for a machine that has been so beneficial to me.

"Very truly yours,
"A. J. STEELE."

"Dr. KIDDER:

"*Sir*—After having tried five different physicians for my wife's health, but all to no avail, I was persuaded to purchase one of your Magnetic Machines of Dr. Bryant, who was then stopping near this place, and it has been of such great benefit to her that I would not be without it for a thousand dollars. You may think I value it pretty high, but if you had seen my wife three months ago, and could see her now, you would think it would be a cheap machine at a thousand dollars.

"S. C. KENNEDY,
"Putnamville, Ind."

The occasional cerebral distress following a severe attack of congestion of the brain was so suddenly relieved by the proper use of the D electrode of Dr. Jerome Kidder's Electro-Medical Apparatus, that the subject writes: "The effect to me was like life from the dead! * * * I consider it a duty which I owe to suffering humanity, as well as to God, to write you these few lines. May God bless you in your work.

"I am your thankful and grateful servant.

"Rev. R. W. OLIVER,
"Prof. Divinity in the Prot. Ep. Seminary, Nebraska City, Nebraska."

"I am highly pleased with its power to renovate the system. * * * My husband has great confidence in your battery. A large lump has been growing on his neck for over 25 years, which has just been removed by electricity."

"Mrs. T. P. HORNBROOK,
"Wheeling, West Virginia."

"I have been using your Electro-Medical Apparatus with great success. I have practised 30 years on the Allopathic system and have seen nothing to equal electricity [in a large variety of cases]. I have used the instrument three weeks only, and hardly tell yet what it will do.

"Dr. A. T. SCHRYVER,
"Hollidaysburg, Pa."

"J. H. Calahan got the Battery for me last spring a year ago, which I think saved my life. I had the dyspepsia and liver complaint of long standing.

"GIDEON DETWEILER,
"Wilmington P. O., Pa."

"I have used your machine for about nine months. * * * This machine surpasses anything for therapeutical purposes known to man [where electricity is indicated as the remedy].

"N. W. BROWN,
"Middle Boulder, Colorado."

"We have one of your vitalizing Electro-Magnetic machines, which we purchased of Dr. W. N. Towndrow last winter. It has done wonders for our mother,

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who has been an opium-eater for several years. She took, last winter, one-eighth ounce morphine every 24 hours for three months. It lasts now (a bottle) 40 days by the help of the instrument.

"D. C. B.

"Neosho, Dodge Co., Wisconsin."

Mrs. A. P. Brossett, of Williamsburg, reports her case:

"Had hemiplegia; could scarcely walk; great pain in nerves, and contraction of muscles, drawing back the foot; numbness to the touch; knotty bunches in cords under the knee, with excruciating pains; limb felt hot with fever, as recognized by her mind, while to the touch it was cold; veins in limb and also on forehead swollen, flattened wide, and black. Had three physicians, two of whom said they could do nothing for her, and one said electricity would not do in her case, because she was too nervous. Another physician advised the use of Dr. Jerome Kidder's Electro-Medical Apparatus. Its use caused the veins to become normal, cured the pain, and relieved the paralysis so that she could walk well, and was almost entirely well."

"I have suffered for the last 3 or 4 years with dyspepsia and its attendant consequences. I could find no relief by the ordinary way of treatment. I was induced to try the effect of one of your electric machines, and am glad to say, with the most successful result. It has cured me, and I have gained forty pounds in weight during the three months I have used it.

"J. S. STANBURY,

"New Brighton,

"Staten Island."

"I was so that I could not move about from rheumatism. I had to be in a dark room from weakness and inflammation of the eyes. I had soreness of the chest and coldness and stiffness of the legs and knees. Feet cold in summer when I had on two pairs of woollen socks—slept in summer in flannel blankets. Your Electro-Medical Apparatus has relieved me entirely. *I have tried other forms of galvanic baths and electrical apparatus, but not with such favorable* results as with yours. My servant girl was suffering terribly with neuralgia in cheeks, and was cured in 15 minutes by your machine, so that she has not had it since.

"C. R. FICH."

"Hundreds of dollars would not purchase it of me if I could not get another, so much do I feel I owe to its effects in restoring me to health and soundness of body.

"A. MALISON,

"Pittsfield, Mass."

"I have used the large machine sometimes regularly every day for several weeks together, but oftener at intervals of longer duration, and I have derived the greatest benefit, both as regards general health, and also more especially as regards a swelling about the joints of the left knee, which other remedies entirely failed to remove. By the continued use of the machine daily for about five weeks, the swelling was entirely removed, and I have never suffered the least pain. If it should be of any consequence I would certify this in a more formal manner.

"Yours,

"GEORGE STRANCHON,

"Head Master of Grammar School at Woodstock, C. W."

"I bought of you, in November last, an Electro-Medical Machine, the Physician's Office size. I used it for asthma, which I had severely. Not only has it benefited my asthma, but it has made *a wonderful cure of polypus in my nose, removing polypus* and nearly curing catarrh. I have used the apparatus six to eight hours daily, or rather nightly, keeping the sponges on me during sleep.

"Very respectfully,

"ANDREW J. GOSS,

"Collector of Customs,

"St. Augustine, Florida."

"Dr. JEROME KIDDER:

Dear Sir—I take the liberty of writing you a few lines in reference to your battery, which has done me so much good. Nearly two years ago I was attacked with amaurosis, or loss of sight. It was only partial at first, but got worse, till I became totally blind. I

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tried the best doctors in the Dominion, till I tried Dr. J. F. Danter, Goderich, Canada, who used one of your batteries, and with success. I have no difficulty in getting around now, and can see to write a letter, but can't see the lines (*paper not ruled, Dr. K.*) I bought one of your machines and have been using it about six months. I think I will get my sight as well as ever in time. * * * I must tell you I was so blind, I could not see the sun in the brightest day.

"D. F. SAVAGE,
"Oakwood, Mariposa,
"Victoria, Ont."

"NEW YORK.

"I would say that my wife has been fully cured of dyspepsia and general debility by the use of electricity from one of Dr. Jerome Kidder's machines.

"E. SEELY, 55 Pike street."

R. Meshural, of North Haven, while in this city in the summer of 1863, had a severe attack of cholera morbus. The muscles of abdomen and lower limbs were affected with spasmodic cramps so severe that two men could not hold him; he had sunken features, blueness of hands and face, cold, clammy skin, and was almost pulseless. Electricity from Dr. Jerome Kidder's Electro-Medical Apparatus was used for about thirty minutes, causing profuse perspiration; also morphia and tannin; ¼ gr. of the former, and 2 grs. of the latter (suppository), were introduced into the rectum. Brandy was freely used, and beef tea. The patient recovered in a short time. Dr. George W. Miner, of this city, in alluding to this case, says: "In my opinion the electricity, with the additional treatment, was the means of cure."

Mr. H. Lehmann, Croton Flour Mills, New York, had for eight years a swelling of the knee, which was called white swelling, and two out of three physicians who had been consulted had advised amputation. He suffered severely, and had to lose from five to six days in stormy weather. He was advised a trial of electricity, and he was *cured by four applications of Dr. Jerome Kidder's Electro-Magnetic Machine.*

Mrs. Wilber, Green Island, foot badly bruised, swollen; could not walk. A few minutes' application of the current reduced the swelling and took the soreness away.

M. Colburn, New York, afflicted for twenty years with rheumatism. For three and a half years could not walk; came near losing the use of his leg from paralysis. Was *perfectly* cured by the use of this apparatus.

Case in Bellevue Hospital, in 1862. A German pianist, severely burned in both hands, cuticle nearly all destroyed, pain excessive, and nervous system much excited. One application removed the pain and quieted his system, and he was well in a few days.

James Sanders, Schenectady, N. Y., affected with severe dyspepsia, and was entirely cured by this machine.

A. Roe, formerly at 27 Park Place, New York, suffered greatly from neuralgic rheumatism for five years, and could not walk; he said he could get no relief, and despaired of a cure till he used this apparatus, which cured him in one month.

S. C. Mack, Skillman street, near De Kalb Avenue, East Brooklyn, says: "Last summer I was afflicted with dyspepsia, could eat but very little, and suffered greatly from nervous debility; was very much emaciated; could not sleep nights; had cold sweats, succeeded by flashes of heat; my skin was a pale yellow. I had been under the treatment of four different physicians, and could get no relief whatever till I was advised by Dr. Palmer, of Brooklyn, to purchase one of your electro-magnetic machines as my only means of cure. I did so, and found great relief in a few applications. I continued its use, and in four or five weeks recovered my health by its means."

GREENVILLE, MISS., Nov. 12, '72

DR. JEROME KIDDER, New York,

Sir:—I have your $20 Apparatus. I have made a remarkable cure with it. I had the palsy. The Doctors all gave me up here. I went to St. Louis and upon my arrival the first thing I did was to purchase one of your Batteries. * * * The cure was almost completed IN THREE DAYS. An old man who had neuralgia for eighteen years, had taken some arsenic, attempted to commit suicide three times, the last time taking laudanum, at which time three doctors were in attendance, (the best in the country). As a last resort one of them called on me [to use the battery,] after the laudanum had been in him five hours. I applied the proper currents, brought him to life, and cured his neuralgia besides. * * *

Yours truly, A. P. KEESECKER.

MANCHESTER, IOWA, Jan. 19, '72.

DR. JEROME KIDDER,

Dear Sir:—Allow me to state that for two years past I have treated Electropathically various forms of diseases, and have in the meantime used three different kinds of Electro-Magnetic Machines. * * * and find *for curative effects* the *Kidder Machine* to be *superior on every trial.* * * * Respectfully yours,

S. W. GREEN, M. D.

PHILADELPHIA, March 3, 1873.

DR. JEROME KIDDER. *Dear Sir:*—I have used your Battery now about one week for dyspepsia, &c., and this morning feel so much improved that you seem like a father to me, although I never saw you. * * *

Yours very truly,

PARKER D. SHAMP,
509 Commerce St.

BROOKLYN, Dec. 19, 1871.

DR. JEROME KIDDER,

Dear Sir:—I take great pleasure in acknowledging the valuable aid I have derived in the use of your Electro-Medical Apparatus in my practice. Numerous obstinate chronic cases which have come under my care for treatment and failing in all other methods of treatment, have either been permanently cured or greatly benefitted. I have used other Electro-Apparatuses, but without the same result as I have had since using those of your manufacture, and urgently advise them to the medical fraternity at large.

Yours, etc.,

N. NEWTON, M. D.

ROCHESTER, N. Y., Jan. 7, '73.

DR. J. KIDDER,

Dear Sir:— * * In the ten years' experience I have had with different batteries, I must say that yours has given the most perfect satisfaction. * *

Yours truly,

DRS. SPRAGUE & DUTTON.

CAMERON MILLS,
STEUBEN CO., N. Y. Dec. 9, '72.

DR. JEROME KIDDER,

Dear Sir:—Your Electro-Medical Apparatus as it stood improved three years ago is familiar to me, and for which I have a DECIDED PREFERENCE to all others. Knowing your enterprise for TRULY SCIENTIFIC improvements, I address you this note that you will oblige me with your latest pamphlet circular of description with drawings, such as I have heretofore seen.

Respectfully,

ELIJAH BECKWITH, M. D.

BRISTOL, TENN.,
April 28th, 1872.

DR. JEROME KIDDER, New York,

Dear Sir:— * * * * [makes inquiries about batteries.] My friend Cohen, [Prof. J. Solis Cohen, of Philadelphia,] writes me "you can rely upon Kidder—he is all right."

I am yours, &c.,

H. V. GRAY, M. D.

PRARIE HOUSE, TEXAS, Oct. 18, '72.

DR. JEROME KIDDER,

Dear Sir:—I have your "Improved Electro-Medical Apparatus," office size, with full set of appliances since the summer of 1870. It has performed well and is all that you claim for it.

I am respectfully,

A. H. MCFALL, M. D.

JACKSONVILLE, TENN.,
Jan. 16th, 1873.

DR. JEROME KIDDER, New York,

Dear Sir:—In a recent letter from A D. Rockwell, I am advised that your machines for Electro-Therapeutics, are SUPERIOR TO ALL OTHERS IN USE—What is the price of * * * ?

Yours truly,

J. W. COLLINS, M. D.
Box 219, Jackson, Tenn.

All necessary forms of extra appliances for applying electricity in special cases, always on hand to supply on application.

"225 W. Chestnut St.,
"LOUISVILLE, Oct. 13th, 1871.
"DR. JEROME KIDDER:

"*Dear Sir*—I am using one of your Electro-Magnetic Machines with more satisfaction than any other I have ever used, and for years I have been familiar with the best American, English, and French makers. I have advised many patients to obtain your machines, but not finding them on sale, they have bought in most instances greatly inferior ones. I wish to know, can you not establish a depot here for the sale of your machines? * * * *

"Yours truly,
"E. S. GRANT, LL.D.,
"Orthopedic Surgeon."

"ADAIRSVILLE, GA.
"DR. JEROME KIDDER:

"*Dear Sir*—The case (Infantile Paralysis) for which I procured one of your Galvano-Electric Machines, has materially improved by the use, and the application of electricity to the paralyzed muscles. Before it was begun, the inferior extremities were entirely powerless, without muscular development, or in any way under the control of the will. Now this patient can bear her weight in the erect position, and walk a short distance if assisted by a friend, or can do so by herself if she has something by which to balance. * * * * *

"Very respectfully,
"Your obedient servant,
"JOHN W. BOWDOIN, M.D."

"Have been in the regular practice 14 years, but could not reach diseases [of many forms] as I now can with the use of the machine [Dr. Jerome Kidder's Genuine Six-Current]. It is a new thing in this country, and met with opposition from the doctors at first, but seeing the effects they admit it. "Dr. W. G. ANDERSON,
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"H. WOODWARD, M.D.
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From Dr. H. A. BENTON, *Troy, N. Y., Practitioner for about forty years with electricity as a specialty.*

TROY, July 26, 1878.

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"Dr. JAS. GRAHAM,
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In the eyes of the public I am working wonders with your instrument, and in many cases in my own estimation.

"J. S. WINANS, M.D.,
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"H. E. BOWLES, M.D.,
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"Prof. C. N. F. PETERS,
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[I did not blow it much, Dr. Cooke; it went itself by the cures effected with it.—DR. KIDDER.]

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